

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 August 2002 (22.08.2002)

PCT

(10) International Publication Number
WO 02/065036 A1

(51) International Patent Classification⁷: **F25D 29/00**,
A47L 15/42, F24C 7/08

(21) International Application Number: PCT/TR02/00004

(22) International Filing Date: 13 February 2002 (13.02.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2001/440 13 February 2001 (13.02.2001) US

(71) Applicant (for all designated States except US): **ARCELİK A.S.** [TR/TR]; E5 Ankara Asfaltı Üzeri, Tuzla, 81719 Istanbul (TR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BUKULMEZ, Bora** [TR/TR]; Arcelik A.S., E5 Ankara Asfaltı Üzeri, Tuzla, 81719 Istanbul (TR). **ALTUN, Ümit** [TR/TR]; Arçelik A.S., E5 Ankara Asfaltı Üzeri, Tuzla, 81719 Istanbul (TR). **ARISOY, Emre** [TR/TR]; Arçelik A.S., E5 Ankara Asfaltı Üzeri, Tuzla, 81719 Istanbul (TR). **BAYIZ, Nihat** [TR/TR]; Arçelik A.S., E5 Ankara Asfaltı Üzeri, Tuzla,

81719 Istanbul (TR). **DURMAZ, Mehmet** [TR/TR]; Arçelik A.S., E5 Ankara Asfaltı Üzeri, Tuzla, 81719 Istanbul (TR).

(74) Agent: **ANKARA PATENT BUREAU LTD.**; Sehit Adem Yavuz Sokak 8/22, Kizilay, 06440 Ankara (TR).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

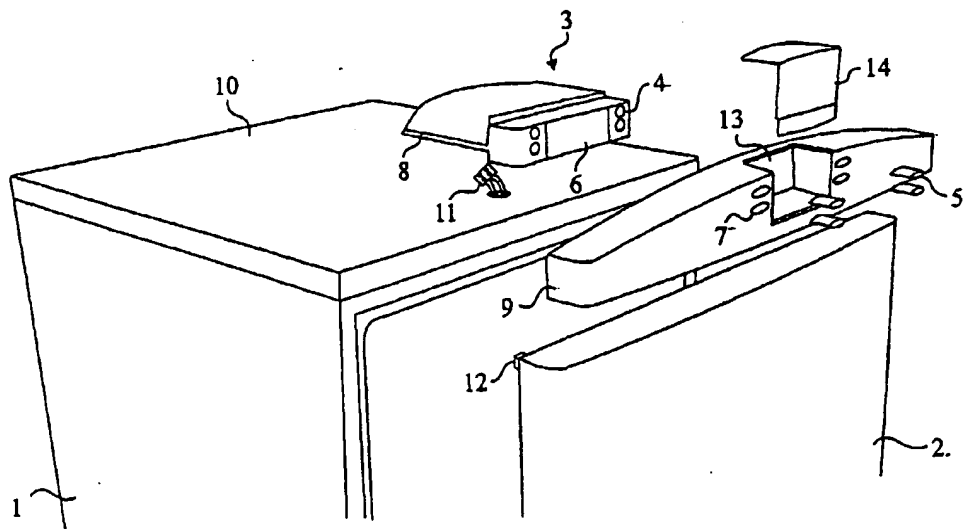
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: DOMESTIC APPLIANCE



(57) Abstract: A door panel (9) is fastened onto the domestic appliance door (2) in order to enable the user to control the control panel (3) placed on the upper panel (10) of the domestic appliance, when the door (2) is closed. The keys on the door (5) located on the door panel (9) contact with the control panel keys (4) located on the control panel (3) when the door is closed, thus enabling the control of the control card. Said control panel keys (4) located on the control panel are in contact with the keys on the door (5) when the door (2) of the domestic appliance is closed. These keys (4,5) provide the modification of the same or different functions.

WO 02/065036 A1



— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

DOMESTIC APPLIANCE

The present invention relates to a domestic appliance with a control panel that allows the regulation, modification or control of various functions when the
5 appliance door is opened or closed.

The term "Domestic appliances" comprises such household machinery as washing machines, dish-washers, refrigerators, ovens, etc. Among these household appliances, for instance refrigerators are provided with a control
10 panel on them, which allows the user to make adjustments or changes in their operational functions (temperature adjustment, holiday option, economic programs, etc.) in order to obtain a cooling at the desired temperature values. The control panel is placed on the refrigerator cabinet or on the refrigerator door and is provided with adjustment buttons to be used for regulating different
15 functions. Furthermore, an indicator that enables the user to monitor the adjustments and changes previously made, is also provided on the control panel.

In the state of art, the control panels are placed on the upper part of the refrigerator cabinets; therefore the refrigerator control cannot be made on the
20 refrigerator door as it is positioned below the front upper section of the refrigerator where the control panel is provided.

In the state of art, there are also some applications wherein the control panel is located on the refrigerator door. However, certain difficulties are
25 encountered in placing the control panel on the door. As the cables providing the electrical connection pass over the hinges, the opening direction of the door cannot be changed.

The keys on the control panel are used to regulate or change only one
30 function. Using different keys for each function, in other words assigning of only one function to one key causes an increase in the number of the keys, which in

turn leads to an increase in the key-control card connection and thus in the refrigerator cost.

In the state of art, various solutions are brought forward for the problem
5 of increased number of keys. One of said solutions is disclosed in the PCT
Application No. 9962287, which describes a remote control device with two
control levels. Said remote control device has two different control circuits.
When it is (closed) off, the functions assigned to the keys located on the upper
section of its surface are activated and when it is (open) on, the functions
10 assigned to the keys on the lower section are activated. The "sensor circuits"
which sense whether the remote control device is at a closed or open position,
provide the activation of the first control circuit when the said device is open and
activates the second control circuit when it is closed (off).

15 In the Japanese Patent No. 6189383, another solution directed to decrease
the number of the keys on a remote control device, is disclosed. Said remote
control device is provided with a lid on the keys located on the inner surface of
said device and when this lid is closed, the keys located on its inner surface are
fitted onto the keys on the inner surface of the device. By means of a key which
20 transmits the status (whether the lid is open or closed) data to the control unite, the
functions to be activated can be recognized.

The object of the present invention is to allow the user to control the
household appliance when its door is open or closed.

25

Another object of the present invention is to decrease the number of keys
provided on the control panel of the household appliance by assigning more than
one function at the same time, to said keys.

30 The domestic appliance control panel realized to attain said objectives of
the present invention is illustrated in the attached drawings, wherein;

Figure 1 is the exploded view of the control panel and the door panel;

Figure 2 is the perspective view showing the closed position of the appliance door;

5 Figure 3, is the perspective view showing the open position of the appliance door.

The components shown in the drawings are separately given reference numerals as shown below:

10

1. Cabinet
2. Door
3. Control Panel
4. Control Panel key
- 15 5. Key-on-the door
6. Indicator
7. Key recess
8. Box
9. Door panel
- 20 10. Upper panel
11. Cable connection
12. Pin
13. Window
14. Lid

25

The domestic appliance according to the invention comprises a cabinet (1), a cabinet-door (2), a control panel (3) that allows the user to change certain parameters of the domestic appliance and to regulate certain functions of it, an upper panel (10) provided on the cabinet (1) onto which the control panel (3) is
30 mounted and a door panel (9) which is mounted on the door (2), in front of the

control panel (3), provides access to the said control panel (3) even when the door (2) is closed.

The control panel (3) comprises one or more control panel keys (4) which
5 allow the user to change certain parameters of the domestic appliance and to regulate certain functions of it, an indicator (6) enabling the user to monitor the adjustments and modifications made, and a box (8) wherein the control card is placed and the electrical connection of which is realized by means of one or more cable connections (11). The keys (4) and the indicator are preferably located on
10 the front face of the box (8).

Preferably said control panel (3) is manufactured separately from the domestic appliance and is mounted into a recess formed on the upper panel (10) of the appliance and fastened to said recess by means of the fastening elements. As
15 it is manufactured separately from the domestic appliance, it may be used for different domestic appliances by making necessary modifications. Furthermore, as the control panel (3) is not located inside the domestic appliance cabinet (1), it is not effected by the potential changes in temperature and humidity that may occur within in the appliance.

20

The door panel (9) comprises one or more keys (5) on the door which allow the user to change certain parameters of the domestic appliance and to regulate certain functions of it and the same number of key recesses (7). The door panel (9) is designed independently of the control panel (3), appliance
25 cabinet (1) and door (2) and provides access to the control panel (3) when said appliance is at "off" position. The door panel (9) has a structure that preferably covers entirely the front face of the control panel (3). A window (13) is provided on the door panel (9) so that the indicator (6) located on the control panel (3) can be seen without opening the domestic appliance door (2). Said window (13) is
30 preferably provided with a movable lid (14) made of a transparent material. The keys (5) on the door are placed into the key recesses (7) provided on the door

panel (9), and preferably have a spring mechanism. As the user presses the keys (5) on the door when the domestic appliance door (2) is closed, these keys (5) get in contact with the keys (4) on the control panel, and activate them by pushing. The window (13) on the door panel (9) allows the indicator (6) to be seen and monitored even when the door (2) is closed, thus enabling the modification of the parameters or adjustments of the functions by means of the keys (5) on the door.

When the domestic appliance door (2) is open, the user can directly use the keys (4) located on the control panel (3) in order to change the parameters or to regulate the functions. On the other hand, when the door is closed, the user is able to employ the control panel keys (4) only by pressing the keys on the door (5) which are preferably affecting to the control panel keys (4) by means of a spring. In this case, the keys (5) on the door allow the user to modify the same or different parameters as those of the control panel keys (4) or to regulate the same or different functions as those of the control panel keys (4).

In order to enable the control panel keys (4) and the keys (5) on the door to change different parameters or to meet different functions, a selective element that transmits the information about the functions to be fulfilled to the control card, is used. Said selective element, for instance a selecting key, is able to execute a process of selection for more than one function that can be realized by other keys. In a preferred embodiment, a pin (12) that transmits the information on the open or closed position of the door (2) to the control card, is used as the selective element. Said pin (12) is located on the cabinet (1) or on the door (2), as well as on the door (2) at a point where the door (2) approaches the cabinet (1) while being closed.

In the embodiment of the present invention, the pin (12) placed on the door (2) approaching to the cabinet (1) contacts with the cabinet (1) and thus the pushed pin (12) opens an electrical switch and initiates the transmittal of the information that the door (2) is closed, to the control card. Then, the parameters

and functions allowed to be modified or regulated by the user when the door is closed, are activated when the keys (5) on the door are pressed. When the door (2) is open, as there is no contact between the door (2) and the pin (12) on the cabinet (1), said pin (12) does not contact with the electrical switch, leaving it at the off position and the information that the door (2) is open, is transmitted to the control card. Then, the parameters and functions allowed to be modified or regulated by the user when the door (2) is open are activated when the control panel keys (4) are pressed.

By virtue of the present invention, the parameters of the domestic appliance can be modified or its functions can be regulated when the domestic appliance door is open or closed, by using a smaller number of keys. The domestic appliance can be designed with less limitations by using the control panel (3) and the cost is reduced as the number of the keys is reduced too. Since the control panel (3) and the door panel (9) are manufactured independently of each other as well as of the other components of the appliance, they may be utilized in different domestic appliances. Due to the presence of the window (13) located on the door panel (9) and the transparent lid (14), the indicator (6) provided on the control panel (3) can be seen even when the appliance door is closed.

CLAIMS

1. A domestic appliance comprising a cabinet (1), a door (2) and a control panel
5 (3) located on the cabinet (1), comprising control panel keys (4) which allow the user to change certain parameters of the domestic appliance and to regulate certain functions of it; characterized with a door panel (9) placed on the door (2), comprising keys (5) on the door that get in contact with the control panel keys (4) which allow the user to change certain parameters of the domestic
10 appliance and to regulate certain functions of it, in order to activate them (4), when the appliance door (2) is closed.
2. A domestic appliance as defined in Claim 1, characterized with the door panel (9) comprising an indicator (6) to monitor the changes in the parameter and
15 functions realized by the user, when the door (2) is open, and a window (13), that coincides with the indicator (6) when the door (2) is closed, to monitor the changes in the parameters and functions realized by the user, when the door (2) is closed, through the indicator (6).
- 20 3. A domestic appliance as defined in Claims 1 and 2, characterized with the door panel (9) comprising preferably a movable lid (14) made of a transparent material.
4. A domestic appliance as defined in Claims 1 to 3, characterized with the door
25 panel (9) manufactured separately from the cabinet (1) and the door (2).
5. A domestic appliance as defined in Claims 1 to 4, characterized with the control panel (3) manufactured separately from the cabinet (1) and the door (2) and, that its electrical connection to the domestic appliance, is realized by
30 a cable connection (11).

6. A domestic appliance as defined in Claims 1-5, characterized with a selective element that executes the selection process between the different parameters to be modified or different functions to be regulated respectively by the control panel keys (4) and the keys-on-the-door (5).

5

7. A domestic appliance as defined in Claim 6, characterized with a selective element located on the door (2) or on the cabinet (1), which is electrically connected to the control card on the control panel (9), in order to transmit the information about the closed or open position of the door, i.e. that "the door is closed" when it is closed and that "the door is open" when it is open, to the control card.

10

8. A domestic appliance as defined in Claim 7, characterized with a pin (12) that is used as the selective element.

15

9. A domestic appliance as defined in Claims 1 to 8, characterized with one or more keys on the door (5) realizing the same functions as the control panel keys (4) which is triggered by the said keys on the door (5) by touching when the door (2) is closed.

20

10. A domestic appliance as defined in Claims 1 to 8, characterized with one or more keys on the door (5) realizing different functions than the control panel key (4) which is triggered by the said keys on the door (5) by touching when the door (2) is closed.

25

Figure 1

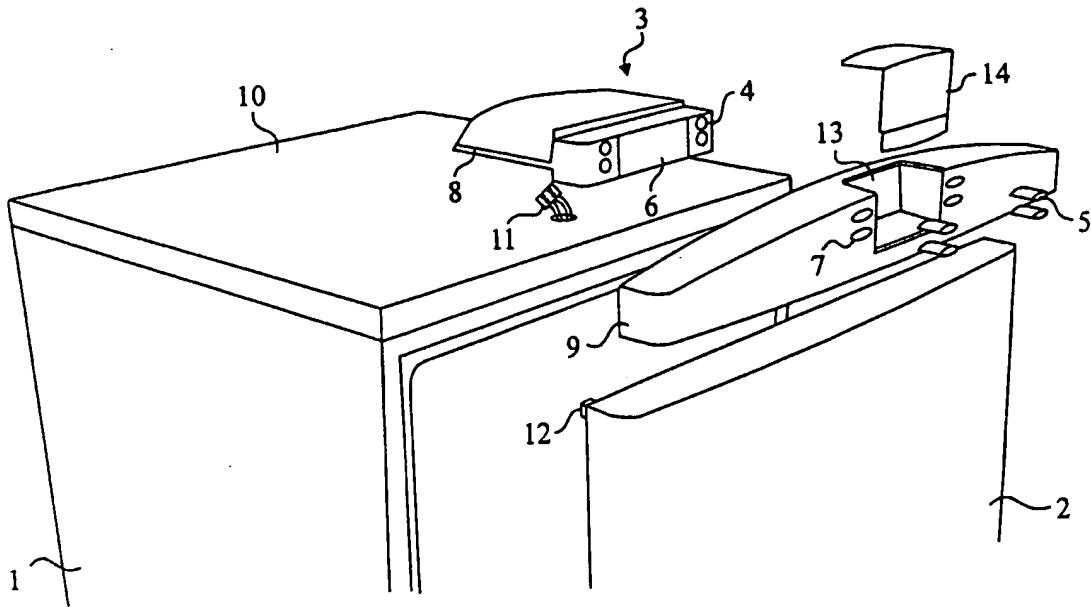


Figure 2

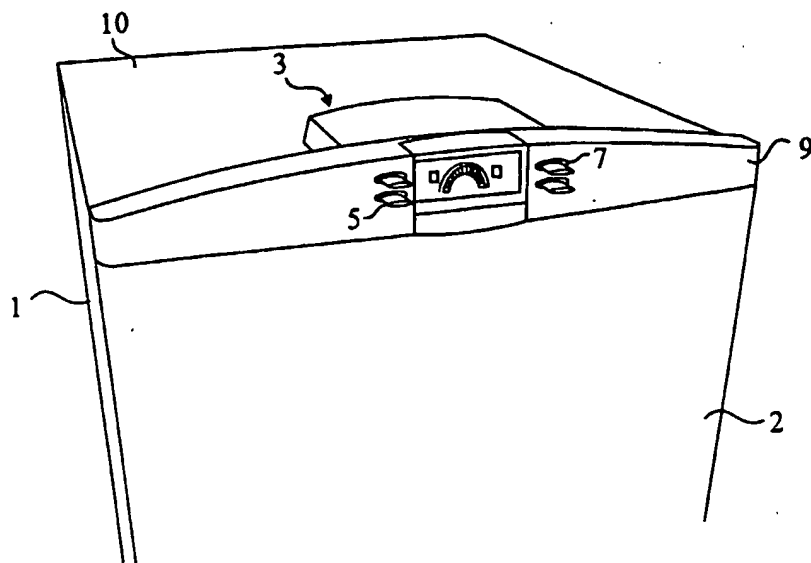
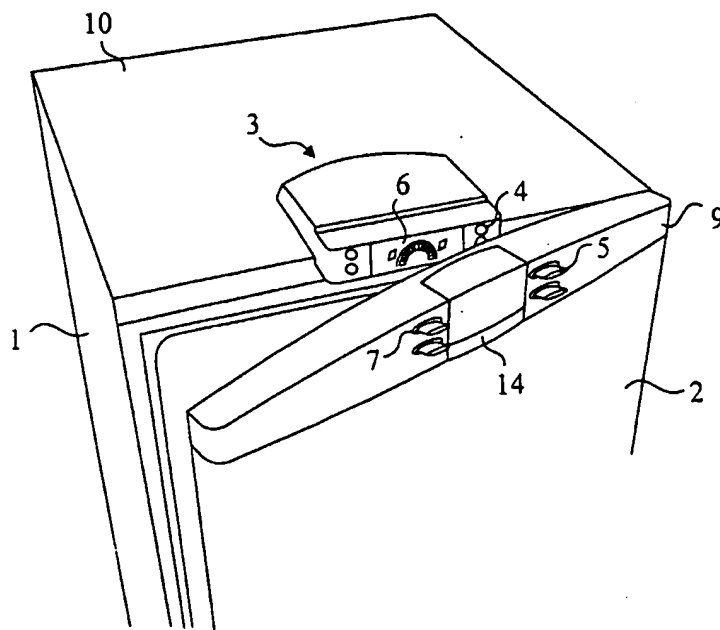


Figure 3



INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/TR 02/00004

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F25D29/00 A47L15/42 F24C7/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F25D A47L H05K F24C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 701 550 A (MERLONI ELETTRODOMESTICI SPA) 19 August 1994 (1994-08-19) page 3, line 5 -page 6, line 3; figures 2-4 ---	1,4,9
X	GB 605 802 A (COLE E K LTD;ANTHONY WYARD MARTIN) 30 July 1948 (1948-07-30) page 2, line 89 -page 3, line 50; figures 1-4 ---	1,9
A	DE 198 40 430 A (BSH BOSCH SIEMENS HAUSGERAETE) 9 March 2000 (2000-03-09) column 3, line 57 -column 5, line 44; figures 1-4 --- -/--	1,5

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

19 June 2002

Date of mailing of the international search report

25/06/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Boets, A

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/TR 02/00004

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 018, no. 540 (E-1616), 14 October 1994 (1994-10-14) & JP 06 189383 A (TOSHIBA CORP), 8 July 1994 (1994-07-08) cited in the application abstract ---	1-3,6,7, 9,10
A	US 5 646 649 A (NAKASU JIRO ET AL) 8 July 1997 (1997-07-08) column 5, line 1 -column 8, line 24; figures 1-6 ---	1-3,6,7, 9,10
A	US 4 878 055 A (KASAHARA YOSHIKI) 31 October 1989 (1989-10-31) column 3, line 4 -column 6, line 17; figures 1-10 ---	6,7,9,10
A	FR 2 763 408 A (GENERATION 5) 20 November 1998 (1998-11-20) page 4, line 20 -page 7, line 35; figures 1-7 ---	6-8,10
A	EP 0 441 525 A (SANDEN CORP) 14 August 1991 (1991-08-14) page 2, line 51 -page 3, line 41; figures 1-3 ---	6-8
A	US 4 404 813 A (PADDOCK STEPHEN W ET AL) 20 September 1983 (1983-09-20) ---	
A	DE 37 08 722 A (DKK SCHARFENSTEIN VEB) 8 October 1987 (1987-10-08) ---	
A	FR 1 196 363 A (KERTESZ JOSEPH) 24 November 1959 (1959-11-24) -----	

INTERNATIONAL SEARCH REPORT
Information on patent family members

Internat'l Application No
PCT/TR 02/00004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2701550	A	19-08-1994	IT 1270453 B DE 4404229 A1 FR 2701550 A1	05-05-1997 18-08-1994 19-08-1994
GB 605802	A	30-07-1948	NONE	
DE 19840430	A	09-03-2000	DE 19840430 A1	09-03-2000
JP 06189383	A	08-07-1994	NONE	
US 5646649	A	08-07-1997	JP 8063437 A	08-03-1996
US 4878055	A	31-10-1989	NONE	
FR 2763408	A	20-11-1998	FR 2763408 A1	20-11-1998
EP 0441525	A	14-08-1991	EP 0441525 A2	14-08-1991
US 4404813	A	20-09-1983	BR 8202243 A CA 1187158 A1 JP 1020718 B JP 1536144 C JP 57184879 A	05-04-1983 14-05-1985 18-04-1989 21-12-1989 13-11-1982
DE 3708722	A	08-10-1987	DD 246825 A1 DE 3708722 A1	17-06-1987 08-10-1987
FR 1196363	A	24-11-1959	NONE	